What is claimed:

1. A gas-assisted electrosurgical accessory connector formed by two mating pieces connectable to one another with a relative connection movement along an axis toward one another, comprising:

a sealing surface formed on one mating piece and extending generally parallel with the axis for a distance along the axis; and

a resilient radial sealing member carried on the other mating piece at a location which contacts and seals against the sealing surface with radial force upon the two mating pieces connecting with relative connection movement.

2. An accessory connector as defined in claim 1, wherein the accessory connector conducts a gas flow and RF electrical energy between the two mating pieces, and wherein:

the sealing surface extends parallel to the axis over a predetermined length; and

the predetermined length of the sealing surface permits the sealing member to contact and seal against the sealing surface over a range of relative connection movement of the two mating pieces approximately equal to a portion of the predetermined length of the sealing surface along the axis.

3. An accessory connector as defined in claim 2, wherein:

the connected mating pieces define a gas passageway circumscribed by the sealing surface and the contact of the sealing member with the sealing surface;

the connecting mating pieces define an electrical conductor circumscribed by the sealing surface and the contact of the sealing member with the sealing surface;

the gas flow is conducted through the gas passageway; and

the RF electrical energy is conducted through the conductor.

4. An accessory connector as defined in claim 1, wherein:

the sealing surface is generally cylindrically-shaped and concentric about the axis.

5. An accessory connector as defined in claim 4, wherein:

the sealing member is annularly shaped.

6. An accessory connector as defined in claim 5, wherein:

the sealing member comprises a resilient O-ring.

7. An accessory connector as defined in claim 6, wherein:

the second connector includes an extension which extends concentrically about the axis;

the O-ring is retained on the extension; and

the O-ring compresses substantially only radially between the extension and the sealing surface.

8. An accessory connector as defined in claim 7, wherein the accessory connector conducts a gas flow and RF electrical energy between the two mating pieces, and wherein:

the generally cylindrically-shaped sealing surface extends concentrically along the axis over a predetermined length; and

the predetermined length of the sealing surface permits the O-ring to contact, move along and seal against the sealing surface over a range of relative connection movement approximately equal to a portion of the predetermined length of the sealing surface along the axis when the mating pieces connect with relative connection movement.

9. An accessory connector as defined in claim 8, wherein:

the extension is hollow;

the gas moves through the hollow extension; and

one of the mating pieces includes an electrical connector which extends through the hollow extension and conducts the electrical energy.

10. An accessory connector as defined in claim 1, further comprising:

a retention mechanism operative between the mating pieces when connected with relative connection movement, the retention mechanism restraining the connected mating pieces against separation from one another with movement away from one another along the axis.

11. An accessory connector as defined in claim 10, wherein the retention mechanism further comprises:

a recess formed on one of the mating pieces;

a retention member carried on the other one of the mating pieces, the retention member moving into the recess upon the two mating pieces connecting with relative connection movement, the retention member moving out of the recess with manual force applied between the two connected mating pieces to separate the connected mating pieces from one another.

12. An accessory connector as defined in claim 11, wherein:

the one of the mating pieces upon which the recess is formed includes a cylindrical end portion;

the other one of the mating pieces upon which the biased retention member is carried comprises an annular slot into which the cylindrical end portion extends upon connection of the mating pieces with relative connection movement;

the cylindrical end portion includes a detent formed therein;

the recess includes the detent; and

the biased retention member includes a ball positioned in the other one of the mating pieces at a position within the annular slot to contact and extend within the detent upon connection of the mating pieces with relative connection movement and to withdraw from within the detent upon separation of the mating pieces from one another.

13. An accessory connector as defined in claim 12, wherein the retention mechanism further comprises:

a biasing member operative between the ball and the other one of the mating pieces to bias the ball into the detent upon connection of the mating pieces and to resist withdrawal of the ball from the detent upon separation of the mating pieces.

14. An accessory connector as defined in claim 13, wherein:

the biasing member comprises a coil spring.

15. An accessory connector as defined in claim 13, wherein:

the cylindrical end portion includes a forward facing cylindrical contact surface;

a plurality of detents are formed and circumferentially spaced at locations in the forward facing contact surface;

the one mating piece includes a channel having an outer end which opens into the annular slot;

the ball is positioned within the channel;

the biasing member comprises a coil spring located within the channel to bias the ball into contact with the detents and the forward facing contact surface of the cylindrical end portion upon connection of the mating pieces with relative connection movement.

16. A gas-assisted electrosurgical accessory connector having a male mating piece and a female mating piece which interconnect together to conduct RF electrical energy and a gas flow from a gas-assisted electrosurgical unit to an electrosurgical accessory; the gas-assisted electrosurgical unit including an electrosurgical generator which generates RF electrical energy and a gas delivery apparatus which delivers the gas flow; the electrosurgical accessory including the male mating piece, an accessory hose, an accessory conductor, a nozzle connected to receive the gas flow from the accessory hose and to issue the gas flow as a flow stream, and an electrode positioned within the nozzle and connected to the accessory conductor to transfer the RF energy to ionize conductive pathways within the flow stream; the male mating piece including a gas passageway that is fluidly connected to the accessory hose, the male mating piece also including a connector electrode that is electrically connected to the accessory conductor; the female mating piece including an electrical terminal that is connected to receive the RF energy generated by the electrosurgical generator and to electrically contact the connector electrode of the male mating piece upon interconnection of the female and male mating pieces, the female mating piece also including an internal gas flow path that is connected to receive the gas flow delivered from the gas delivery apparatus and to conduct the gas flow to the gas passageway of the male mating piece upon interconnection of the female and male mating pieces; the accessory connector further comprising:

an annular and radially compressible gas seal member attached to the male mating piece and surrounding the gas passageway; and

an outer wall attached to the female mating piece and surrounding the internal gas flow path, the outer wall defining a cylindrical recess therein, the cylindrical recess receiving the annular gas seal member in radial compression against the cylindrical recess to create a gas tight connection between the gas flow path and the gas passageway upon interconnection of the male and female mating pieces.

17. An accessory connector as defined in claim 16, wherein the female and male mating pieces include complementary threads which mesh with one another upon screwing the male mating piece into the female mating piece to interconnect the mating pieces, the accessory connector further comprising:

a retaining mechanism including a biasing element connected to one of the mating pieces to bias the male mating piece against unscrewing from the female mating piece.

18. An accessory connector as defined in claim 17, wherein:

the male mating piece has a forward edge;

the retaining mechanism includes a series of detents on the forward edge of the male mating piece;

the retaining mechanism includes a ball connected to the female mating piece at a location to fit within a detent upon interconnection of the female and male mating pieces; and

the biasing element comprises a spring connected to the ball to bias the ball into the detent upon interconnection of the female and male mating pieces to restrain the male mating piece against unscrewing from the female mating piece.

19. An accessory connector as defined in claim 16, wherein the gas seal member comprises an O-ring.

20. An accessory connector as defined in claim 19, wherein the male mating piece includes a hollow sleeve member and an interior hub member surrounded by the sleeve member and confined within the sleeve member, the

sleeve member rotating relative to the hub member, the sleeve member including external threads, and the gas passageway extending through the hub member; the female mating piece including a receptacle housing which defines an interior receptacle with interior threads, the interior gas flow extending through the receptacle housing and into the receptacle; the male mating piece is interconnected to the female mating piece by screwing the threads of the sleeve member into the threads of the receptacle, and the gas passageway extends through the hub member, and wherein:

the O-ring is attached to the hub member.

21. An accessory connector as defined in claim 16, wherein the electrical terminal is at least partially within the gas flow path, the accessory connector further comprising:

a terminal seal connected around the electrical terminal to create a gas tight seal between the electrical terminal and the female mating piece to prevent gas from flowing from the gas flow path out of the female mating portion around the electrical terminal.

22. An improved mating piece of a gas-assisted electrosurgical accessory connector to be used with an other mating piece connectable together with a relative connection movement along an axis toward one another, the accessory connector conducting a gas flow and RF electrical energy between the first and second mating pieces, the other mating piece including a resilient sealing member carried on the other mating piece, said improved mating piece comprising:

a sealing surface extending generally parallel with the axis for a distance along the axis and at a location which contacts and seals against by the sealing member engaging the sealing surface with radial force upon the two mating pieces connecting with relative connection movement.

23. An improved mating piece as defined in claim 22, wherein:

the sealing surface is generally cylindrically-shaped and concentric about the axis.

24. An improved mating piece as defined in claim 23, wherein:

the gas flow and the RF energy are conducted in a location within the connected mating pieces circumscribed by the sealing surface.

25. A gas-assisted electrosurgical accessory connector formed by two mating pieces connectable to one another with a relative rotational connection movement along an axis toward one another, the accessory connector conducting a gas flow and RF electrical energy between the two mating pieces comprising:

a retention mechanism operative between the mating pieces when connected with relative connection movement, the retention mechanism restraining the connected mating pieces against rotation with respect to one another to separate from one another along the axis.

26. An accessory connector as defined in claim 25, wherein the retention mechanism comprises:

a recess formed on one of the mating pieces;

a retention member carried on the other one of the mating pieces, the retention member moving into the recess upon the two mating pieces connecting with relative connection movement, the retention member moving out of the recess from manual rotational force applied between the two mating pieces to separate the mating pieces from one another.

27. An accessory connector as defined in claim 26, wherein:

the one of the mating pieces upon which the recess is formed includes a cylindrical end portion;

the other one of the mating pieces upon which the retention mechanism is carried comprises an annular slot into which the cylindrical end portion extends upon connection of the mating pieces with relative connection movement;

the cylindrical end portion includes a detent formed therein;

the recess includes the detent; and

the retention member includes a ball positioned in the other one of the mating pieces at a position within the annular slot to contact and extend within the detent upon connection of the mating pieces with relative connection

movement and to withdraw from within the detent upon separation of the mating pieces from one another.

28. An accessory connector as defined in claim 27, wherein the retention mechanism further comprises:

a biasing member contacting the ball to bias the ball into the detent upon connection of the mating pieces and to resist withdrawal of the ball from the detent upon separation of the mating pieces.

29. A method of connecting together two mating pieces of a gas-assisted electrosurgical accessory, comprising:

connecting the two mating pieces by moving the two mating pieces together along an axis in a relative connection movement;

contacting a sealing member carried on one mating piece with a sealing surface formed on the other mating piece, the sealing surface extending generally parallel with the axis for a distance along the axis; and

resiliently compressing the sealing member in a radial direction relative to the axis in contact with the sealing surface to establish a gas tight seal over a range of the relative connection movement.

30. A method as defined in claim 29, further comprising:

conducting a gas flow and RF electrical energy between the connected two mating pieces; and

contacting and sealing the sealing member with the sealing surface over a range of relative connection movement of the two mating pieces over a portion of the predetermined length of the sealing surface along the axis.

31. A method as defined in claim 30, further comprising:

conducting the gas flow and the RF electrical energy in a space circumscribed by the sealing surface and the contact of the sealing member with the sealing surface.

32. A method as defined in claim 29, wherein the sealing surface is generally cylindrically-shaped and concentric about the axis, and the sealing member is annularly shaped.

33. A method as defined in claim 29, further comprising:

restraining the connected mating pieces against separation from one another with movement away from one another along the axis.

34. A method as defined in claim 33, further comprising:

restraining the connected mating pieces against separation by moving a retention member carried by one mating piece into a recess formed in the other mating piece upon the two mating pieces connecting with relative connection movement; and

moving the retention member out of the recess with manual force applied between two connected mating pieces to separate the mating pieces from one another.

35. A method as defined in claim 34, further comprising:

rotating the two mating pieces in one relative rotational direction with respect to one another to connect the mating pieces with relative connection movement; and

rotating the two mating pieces in the other relative rotational direction with respect to one another to separate the mating pieces.

36. A method as defined in claim 34, further comprising:

biasing a ball member into the recess upon connecting the two mating pieces with relative connection movement; and

overcoming a bias force biasing the ball member into the recess by manual force of rotating the two mating pieces in the other relative rotational direction to move the ball from the detent to permit separation of the mating pieces.

37. A method of connecting together and disconnecting two mating pieces of gas-assisted electrosurgical accessory in a connected together relationship, comprising:

connecting the two mating pieces by moving the two mating pieces together along an axis in a relative connection movement;

contacting a sealing member carried on one mating piece with a sealing surface formed on the other mating piece, the sealing surface extending generally parallel with the axis for a distance along the axis;

conducting a gas flow and RF electrical energy between the two connected mating pieces;

restraining the connected mating pieces against separation by moving a retention member carried by one mating piece into a recess formed in the other mating piece upon the two mating pieces connecting with relative connection movement; and

moving the retention member out of the recess with manual force applied between the two mating pieces to separate the mating pieces from one another.

38. A method as defined in claim 37, further comprising:

rotating the two mating pieces in one relative rotational direction with respect to one another to connect the mating pieces with relative connection movement;

biasing a ball member into the recess upon connecting the two mating pieces with relative connection movement;

rotating the two mating pieces in the other relative rotational direction with respect to one another to separate the mating pieces; and

overcoming a bias force biasing the ball member into the recess by manual force of rotating the two mating pieces in the other relative rotational direction to move the ball from the detent to permit separation of the mating pieces.

39. A method of connecting a gas-assisted electrosurgical accessory to a gas-assisted electrosurgical unit by interconnecting a male mating piece and a female mating piece to conduct RF electrical energy and a gas flow from the gas-assisted electrosurgical unit to the electrosurgical accessory; the gas-assisted electrosurgical unit generating the RF electrical energy and delivering the gas flow; the electrosurgical accessory including the male mating piece, an accessory hose, an accessory conductor, a nozzle connected to receive the gas flow from the accessory hose and to issue the gas flow as a flow stream, and an electrode positioned within the nozzle and connected to the accessory conductor to transfer the RF energy to ionize conductive pathways within the flow stream; the male

mating piece including a gas passageway that is fluidly connected to the accessory hose, the male mating piece also including a connector electrode that is electrically connected to the accessory conductor; the female mating piece including an electrical terminal that is connected to receive the RF energy generated by the gas-assisted electrosurgical unit and to electrically contact the connector electrode of the male mating piece upon connection of the female and male mating pieces, the female mating piece also including an internal gas flow path that is connected to receive the gas flow delivered from the gas-assisted electrosurgical unit and to conduct the gas flow to the gas passageway of the male mating piece upon interconnection of the female and male mating pieces; said method comprising:

radially sealing the interconnected female and male mating pieces to create a gas-tight seal between the gas flow path and the gas passageway when the mating pieces are interconnected with one another.

40. A method as defined in claim 39, wherein the female mating piece includes an outer wall that defines a cylindrical recess, and the male mating piece includes a radially compressible gas seal that surrounds the gas passageway, further comprising:

inserting part of the male mating piece and the gas seal into the cylindrical recess to establish a radial seal between the mating pieces by radially compressing the gas seal between the male mating piece and the cylindrical recess.

41. A method as defined in claim 39, wherein the female and male mating pieces each include threads which are meshed together when the mating pieces are interconnected by screwing the male mating piece into the female mating piece, one mating piece including a recess and the other mating piece including a restraining member biased into contact with the recess upon interconnecting the mating pieces, including the method further comprising:

biasing the male mating piece against unscrewing from the female mating piece by contacting the restraining member with the recess and biasing the restraining member within the recess to resist relative unscrewing movement of the male mating piece from the female mating piece.